Product policies. characterization results ash by burning layer fluid

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PRODUCT POLICIES. CHARACTERIZATION RESULTS ASH BY BURNING LAYER FLUID

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Abstract: By economical and at the same time ecological reasons, industrial refuses (ashes) are being transported in waste dumps like offal's .To reduce the storage surfaces these offal's are incinerated and results a new refuse - the ash.(Ex. paper factories, thermo power stations).It's very important to find solutions to turn to good account the ash.

1. THE MARK OF THE ASH RESULTED BY INCINERATING IN FLUID STRATUM

Studies were made using the two ashes resulted by incinerating *offal's*, in fluid stratum at a temperature of 700 - 800 Celsius degrees. Right after the ashes going out from the furnace these are mottled with water, to avoid the powdery, and after that are being transported to the waste dump.

The marks of theses two ashes are presented in figures 1 and 2.

CHEMICAL COMPOSITION [%]	ASH A	ASH B
SiO_2	37,2	31,6
Al_2O_3	21,2	16,0
Fe_2O_3	1,2	0,82
CaO	28,6	33,5
MgO	3,5	3,9
Mn_2O_3	0,06	0,03
P_2O_5	0,33	0,24
TiO_2	0,55	0,44
BaO	-	0,02
SO_3	0,58	0,22
K_2O	0,67	0,50
Na_2O	0,47	0,30
Cl	0,053	0,06
F	0,12	-
Loss at calcination	5,2	13,37
Total	99,7	100
CaO liber	1,6	-
S/(A+F)	1,65	1,88
A/F	18	19,51

Table 1.The chemical composition of A and B ashes used in experimental determinations.

ASH A		ASH B
Particles composition	Passing [%]	Phase composition (determined through DRX)
Riddle with och.: 1mm	100	Predominant phases:
500μm	100	- anorthic
250 μm	99,9	- gehlenit
125 μm	98	- amorphous phase

90 µm	91	Minor Phase:
63µm	80	-calcite
45µm	61	-dolomite
Sedimentare 40µm	56	- quartz
30µm	52	
20µm	42	
15µm	33	
10µm	24	
5µm	13	
2µm	4	

Table 2.Particles size from ash A and phase composition of ash B used in experimental determinations.

In figure 1 it is presented the granulemetrical composition of ash A determined with a granulemeter with laser "analisette 22".

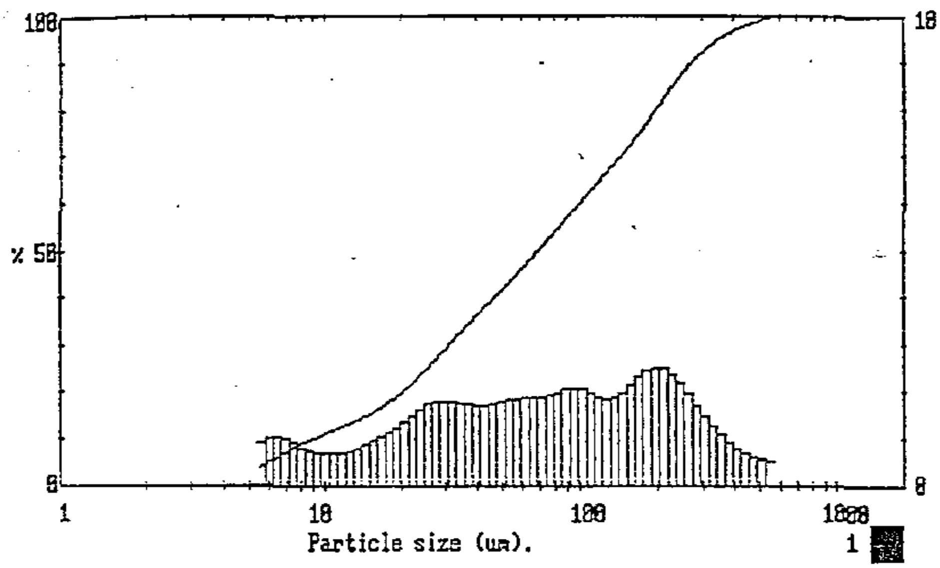

Figure 1.The granulemeter curve of Ash A

To locate the two ashes in the ternary diagram CaO - Al2O3 - SiO2 were taken into account only those three oxides which have the weight in the ashes composition and it was recalculated the size of those three oxides (%) in table 3.

	SiO2[%]	Al2O3[%]	CaO[%]	Sum
Ash A	42,76	24,37	32,87	100,00
Ash B	38,96	19,73	41,31	100,00

Table 3. The oxide composition of those two ashes recalculated in the system CaO - Al2O3 - SiO2

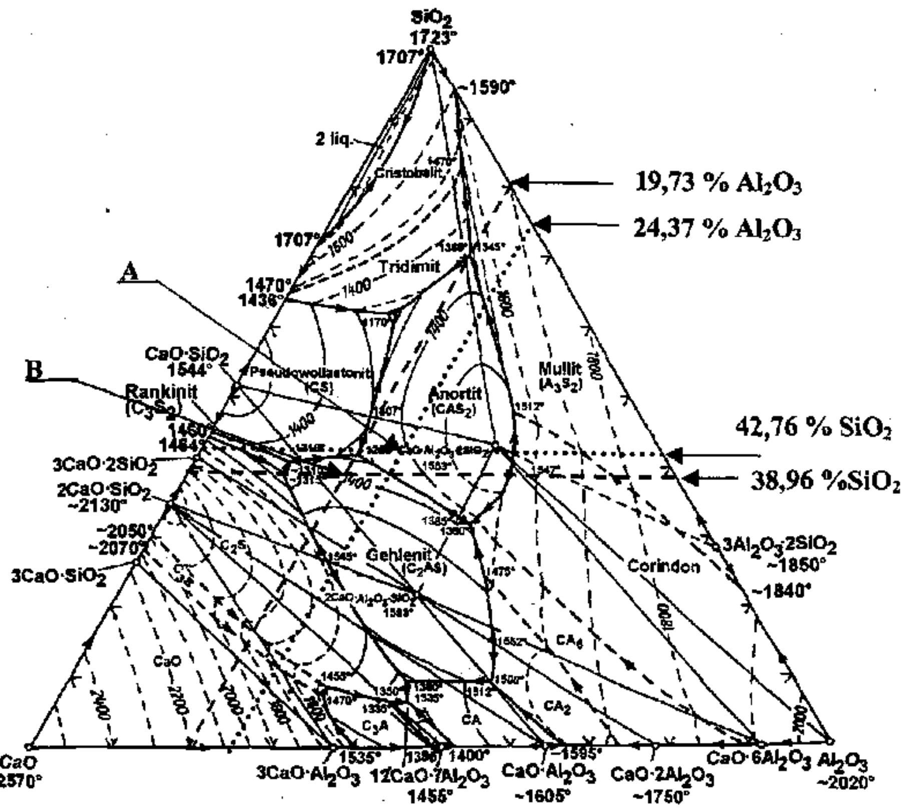

Figure 2.Locating the two studied ashes in the system CaO - Al2O3 - SiO2.

It can be noticed that in the ternary system CaO - Al2O3 - SiO2 these ashes belong to the sub-system CAS2 - C2AS - CS; Ash A belongs to the primary crystallization field of anorthic (C2AS),while ash B belongs to the primary crystallization field of gehlenit. The positions of these two ashes in the ternary diagram CaO - Al2O3 - SiO2 reflects compositional variation quite important of these two ashes, depending on the origin of the slam they come from.

Ash A behavior during the thermal treatment was observed through a graphic derivation analysis. It was used a graphic derivation machine called Paulik-Erdey MOM type, Budapest. The graphic derivation report obtained is presented in the figure 3

Starting from ashes' positions in the ternary diagram CaO - Al2O3 - SiO2 as well as taking into account the global oxide composition of all these, and also seeing all the information's from special literature regarding the usage concern of these ashes, can be synthesized the following potential way of turning them into good account:

a)The main component in the raw material mixing to obtain portland.
b)An addition to grind the portland (composites) clinker of cement.
c)Raw material to produce the calcareous stone - silicon products.
d)Raw material to produce crockery slates.
e)Raw material to produce colored glazes for the vitreous type products.
f)Raw material to frame some frittes for plaster rough cast emails.
g)The granulation of ashes and their usage as aggregates to obtain some macro-porous products.
h)Obtaining autoclave cellular concretes.

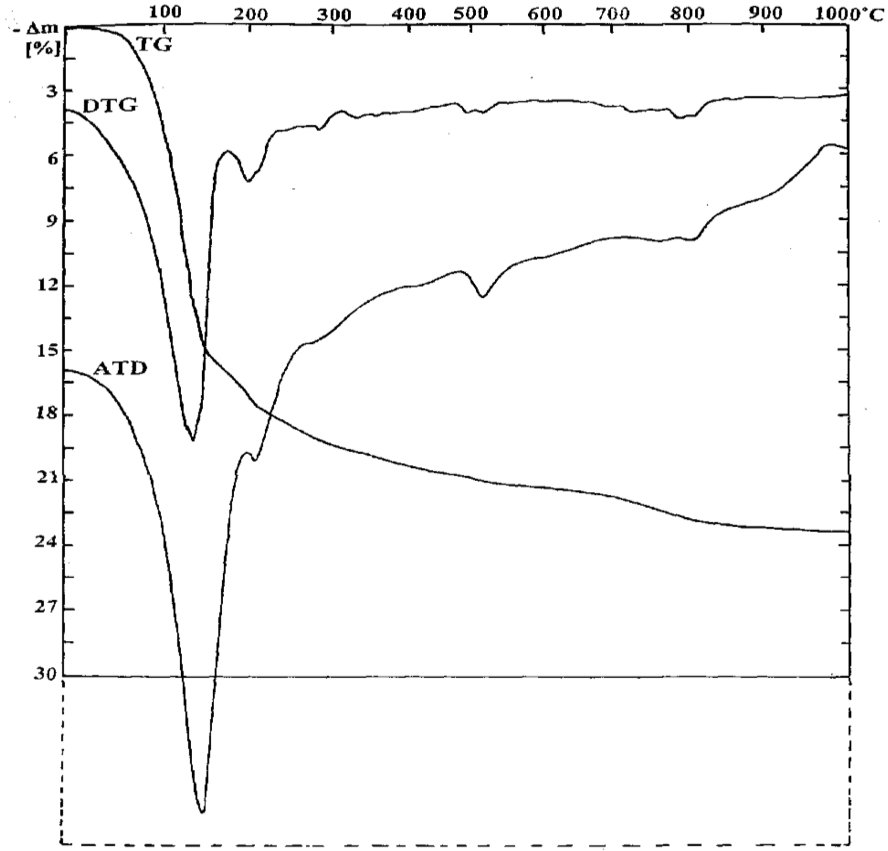

Figure 3.The graphic derivation report of the Ash A:the TG,DTG and ATD curves.

REFERENCE

[1] E.M.Levin,Carl R.Robbins,Howard F.McMurdie - Phase Diagrams for Ceramists,The American Ceramic Society,Ohio 1994